

SVIATSKIY, P.S., inzh.

New machinery and tools for finishing work. Biul.tekh.inform. 3
no.2:21-25 F '57. (MIRA 10:10)
(Finishes and finishing)
(Building machinery)

SVIATUKHINA, O.A.

Pathological anatomy of diseases caused by Cocksackie viruses in
humans and under experimental conditions. Arkh. pat. 22 no. 6:3-
14 '60. (MIRA 14:1)

(COXSACKIE VIRUSES)

SMOLA, K.I.; GURILENOK, A.S.; SVICHAR, A.Ye.

Industrial steam-gas thermal electric power plant. Prom.energ.
16 no.10:36-40, 0 '61. (MIRA 14:10)
(Electric power plants)

KUTSER, M.Ya., inzh.; SVICHAR, N.Sh., inzh.

Introduction of universal boring heads. Mash. Bel. no. 5:140-142
'58. (MIRA 12:11)

(Drilling and boring machinery)

SVICHAR, N.S.; KUTSER, M.Ya.

The D-452-type bucket loader. Biul.tekh.-ekon.inform. no.11:
72-74 '59. (MIRA 13:4)
(Conveying machinery)

SVICHENSKAYA, A.A.

~~SVICHENSKAYA, A.A.~~
Lycoptera fragilis from Lower Cretaceous deposits of Mongolia. Trudy
Paleont. inst. 48:195-198 '54. (MIRA 8:5)
(Mongolia—Fishes, Fossil)

SVICHENSKAYA, A.A.

Gray mullet from Sarmatian deposits of Moldavia. Paleont. zhur.
no.1:98-99 '59. (MIRA 13:1)

1. Paleontologicheskii institut Akademii nauk SSSR.
(Naslavcha region--Gray mullets, Fossil)

SVICHENSKAYA, A.A.

Fossil representative of the family Mullidae. Mat.k "Osn.paleont."
no.3117-118 '59. (MIRA 15:7)
(Moldavia--Mullidae, Fossil)

SVICHENSKAYA, A.A.

New species of Atherina from the Middle Miocene in the Northern
Caucasus. Mat.k "Osn.paleont." no.3:119-120 '59. (MIRA 15:7)
(Caucasus, Northern Atherinidae, Fossil)

SVICHENSKAYA, A.A.

New gray mullets from the middle Pliocene of Abkhazia. Paleont.
zhur. no.3:109-114 '60. (MIRA 13:10)

1. Paleontologicheskii institut Akademii nauk SSSR.
(Gvada region--Gray mullets, Fossil)

CHUGUNOV, Anatoliy Mikhaylovich; SVICHINNIKOV, M.I., inzh., retsen-
zent; FOMIN, G.P., inzh., red.; DUGINA, N.A., tekhn. red.

[Fitting and ganging operations] Slesarno-lekal'noe master-
stvo. Moskva, Mashgiz, 1961. 46 p. (Biblioteka rabochego-
mashinostroitelia. Seriya: Peredovaya tekhnika - osnova kom-
munisticheskogo truda, no.10) (MIRA 15:7)

1. Zamestitel' nachal'nika instrumental'nogo tsekha Ural'skogo
zavoda tyazhelogo mashinostroyeniya (for Chugunov).
(Machine-shop practice)

SVICHINSKIY, Nikolay Nikolayevich; YATSENKO, Mikhail Yakovlevich;
FEDOROV, G.K., red.; FEDOROV, V.P., red., izd-va; LAVRENOVA,
N.B., tekhn.red.

[Preparation of ships for their inspection by the Register
of the U.S.S.R.] Podgotovka sudov k osvidetel'stvovaniyu
Registrom SSSR. Moskva, Izd-vo "Morskoi transport," 1960.
96 p. (MIRA 13:11)
(Ships--Registration and transfer)

ZAMOTA, V.I.; SVICHINSKIY, N.N.; SERGEYEV, D.I., red.; TIKHONOVA,
Ye.A., tekhn. red.

[Operation, repair, and modernization of the power plant
on "Kazbek"-type tank vessels] Opyt ekspluatatsii, remonta
i modernizatsii silovoi ustanovki tankerov tipa "Kazbek."
Moskva, Izd-vo "Morskoi transport," 1963. 174 p.
(MIRA 16:10)

(Marine diesel engines)

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SVICHKAREV, V. D.

Ratsionalizatory Minskogo Avtozavoda V Bor'be Za Tekhnicheskii Progress
(Innovators of Technical Progress in the Minsk Automotive Plant, by) D. S.
Dosyulev I V. D. Svichkarev. Minsk, Gos. Izd-Vo BSSR, 1956. 14 p. Illus.,
Diagrs., Ports. (Bibliotekha Novatora) At Head of Title: Respublikanskiy Dom
Nauchno-Technicheskoy Propagandy Pri Gosplane BSSR.

SVICHKAREV, V.D., inzhener

Best technologist of the Minsk Automobile Plant. Mashinostroitel'
no.3:22 Mr '57. (MLRA 10:5)
(Labor productivity)

SVICHKARNV, V.D.

Pneumatic feed of coolant. Mashinostroitel' no.9:39 S '57.
(Metal-working lubricants) (Pumping machinery) (MIRA 10:9)

AUTHOR: Svichkarev, V.D.

SOV/117-58-11-9/36

TITLE: The Best Innovator (Luchshiy ratsionalizator)

PERIODICAL: Mashinostroitel', 1958, Nr 11, p 11 (USSR)

ABSTRACT: Nikolay Stepanovich Krivets is the best innovator in the Minskiy avtomobil'nyy zavod (Minsk Automobile Plant). He has modernized several contact-welding machines and made various other suggestions for efficiency improvement. He is the co-author of an efficiency suggestion for using ignitrons, 100/1,000, in point-welding machines. There is 1 photo.

1. Spot welding machines--Design
2. Ignitrons--Applications
3. Personnel--Performance

Card 1/1

SVICHKAREV, V.

Designer and innovator. Mashinostroitel' no.3:33 Mr '60.
(MIRA 13:6)
(Minsk--Automobile industry--Technological innovations)

SVICHKAREV, V.D.

Researching. Mashinostroitel' no.6:9 Je '62.
(Minsk--Automobile industry)

(MIRA 16:5)

SVICHKAREV, V. D.

Search and you will find. Mashinostroitel' no.10:4-5 0 '62.
(MIRA 15:10)

(Minsk--Automobile industry)

SVICHKAREV, V. D.

Universal pneumatic press. Mashinostroitel' no.12:28 D '62.
(MIRA 16:1)

(Power presses)

SVICHKAREV, V.

Screwdriver for wheel nuts. Avt.transp. 41 no.10:25 0 '63.
(MIRA 16:10)

SVICHKAREVA, A. I. Cand Med Sci -- (diss) "Peculiarities of the carriage ^{of} of hemolytic streptococci and the state of antitoxic immunity in relation to the level of incidence of scarlet fever." Mos, 1959. 14 pp (Acad Med Sci USSR), 250 copies (KL, 50-59, 129)

Sold then to, AP.

SVIDCHENKO, A.L.

Sensitivity of enterococci to some antibiotics and their combinations
[with summary in English]. Antibiotiki 2 no.6:42-44 N-D '57.
(MIRA 11:2)

1. Kafedra mikrobiologii (zav. - chlen-korrespondent AMN SSSR prof.
V.S.Derkach) Khar'kovskogo meditsinskogo instituta.

(STREPTOCOCCUS, effect of drugs on,
antibiotics, individually & in assoc. (Rus))

(ANTIBIOTICS, effects,
on Streptococcus, individually & in assoc. (Rus))

BGGUN-DOEROVOL'SKIY, A.I., inzh.; SVIDCHENKO, A.N., inzh.

Mechanized soldering of the frontal connections of the hydro-
generators of the Irkutsk Hydroelectric Power Station.
Elek. sta. 36 no.12:40-42 D '65. (MIRA 18:12)

SVIDCHENKOVA, V.N., inzh.

Circuits of magnetic amplifiers providing increased stability.
Elektrotehnika 35 no.6:10-13 Je '64. (MIRA 17:8)

DUBROVSKIY, Yu.A.; SVIDENKO, G.D.

Occurrence of dermal leishmaniasis among greater gerbils in the interfluvium of the Tedzhen and Murgab Rivers use of the methods of medium-scale mapping. Zool. zhur. 42 no.9:1403-1408 '63.

(MIRA 16:12)

1. Department of Diseases of Natural Fidelity, Institute of Epidemiology and Microbiology, Academy of Medical Sciences, Moscow, and Turkmenian Anti-Plague Station, Ashkhabad.

VINNITSKIY, A.A.; SVIDENKO, V.N.

Effect of the elastic deformation of dies on the forming of a deformation center and on the indications of a sectional gauge for the measurement of friction forces. Trudy Inst. met. i obog. AN Kazakh. SSR 10:91-98 '64.
(MIRA 18:7)

SVIDENKO, G.D.

Materials on the ecology of the suslik *Spermophilopsis leptodactylus* in Turkmenistan. Izv. AN Turk.SSR. Ser.biol.nauk no.2: 78-85 '63. (MIRA 16:5)

1. Turkmenskaya protivochumnyaya stantsiya.
(TURKMENISTAN--SUSLIKS)

SVIDER, E. M.; GOL'DBERG, A. M.

Dispensary treatment of diabetes mellitus. Zdravookhranenie 5
no.2:59-60 Mr-Apr '62. (MIRA 15:7)

1. Iz 4-oy klinicheskoy bol'nitsy g. Kishineva (glavnyy vrach
M. A. Ashumov).

(DIABETES)

REZNIKOV, V.M.; SVIDERIK, G.V.; LEVDIKOVA, V.L.; PONUROVA, G.D.

Ultraviolet spectra of condensed lignins. Zhur.prikl.khim. 36
no.6:1314-1322 Je '63. (MIRA 16:8)

1. Sibirskiy tekhnologicheskii institut, g. Krasnoyarsk.
(Lignin--Spectra)

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S/020/61/139/003/025/025
B103/B208

AUTHOR: Sviderskaya, G. Ye.

TITLE: Effect of gamma radiation on the development of the motive function of fowl embryos

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 3, 1961, 729-732

TEXT: In a previous paper (Ref. 11: G. Ye. Kuz'mina, Mater. po evolyutsionnoy fiziologii, 4. (Data on evolutionary physiology), Izd. AN SSSR, 1960, p. 274), the author stated that the total evolution and complication of motive activity in irradiated fowl embryos is not changed with respect to its character, but proceeds much more slowly than in normal embryos. Since only few data are available on the changes in the functional development of the fetal nervous system, the author wanted to clarify the following on irradiated fowl embryos: (a) the time of formation and the character of development of involuntary and reflex movements; (b) time of active and rest periods of involuntary movements; (c) succession and time of development of new reflexogenic zones; (d) weight and external changes of control and test embryos. Embryos of the species

Card 1/4

Effect of gamma radiation on the...

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embryos died due to radiation damage. In addition to deformations of beak and legs, massive bleedings occurred in the skin. In series II, also the allantois vessels were changed. The motive reaction was less intense in the irradiated embryos. A generalized movement was rather rare in them, and quite rarely a tonic permanent contraction occurred after tactile stimulus of the reflexogenic zones. It is concluded from these results that the changes observed may be due to (1) damage of the central nervous system, and (2) damage of the sensory apparatus of the skin. The disturbed dynamics of the development of involuntary movements indicates a direct injury of the spinal cord (1). The retarded development of reflexogenic zones, and data published on the damage of receptors by the irradiation of fully grown animals, are indicative of a possible damage of (2). There are 2 figures, 1 table, and 14 references: 9 Soviet-bloc and 5 non-Soviet-bloc. The three references to English-language publications read as follows: Ref. 3: S. P. Hicks, *Pediatrics*, 40, No. 4, 489 (1952); Ref. 6: R. Rugh, *Radiology*, 71, No. 5, 729 (1958); Ref. 13: L. Kuo, *Exp. Zool.*, 61, No. 3, 395 (1932).

Card 3/4

30710

00020/61/141/002/024/027

B-01/B110

27.12.20

AUTHOR: Sviderskaya, G. Ye.

TITLE: The effect of gamma radiation on the structural development of the spinal cord of the chicken embryo

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 469 - 472

TEXT: The action of gamma rays on the spontaneous and reflex movements of the chicken embryo was examined in the preceding work (G. Ye. Kuz'mina (Sviderskaya), Mater. po evolyutsionnoy fiziologii, 4, Izd. AN SSSR, 1960, p. 274). The structural development of the cervical spinal cord was studied as well. The present work is a report on this morphological material. One-, four-, and seven-day-old chicken embryos of the white Leghorn breed were exposed to the radiation of Co^{60} (dose rate 1.2 to 1.4 r/min; integral dose, 600 to 1500 r). The cervical part of the spinal cord was fixed with Carnoit (Karnua) liquid. The DNA distribution was studied by means of the Feulgen reaction, and the RNA distribution by means of pyronine according to Brachet (Brashe). The sections were stained with

Card 1/4

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The effect of gamma radiation...

These lumps contained DNA and RNA. Furthermore, completely destroyed cells were found. When 4-day-old embryos were irradiated, the destruction spread over the entire spinal cord; in the case of 7-day-old embryos, however, only the dorsal part of the ependyma was affected. This localization is due to increased mitotic activity. Irradiation of 1-day-old embryos retarded the development of the spinal cord, which was, however, gradually caught up. In addition to this recovery, pathological processes occurred as well. They brought about changes in the cell nucleus, in the nucleolus, and in the cytoplasm. Various dropsical phenomena were observed. 3 to 5 days after irradiation the cells changed as a result of pericellular edemata. Cells with a nucleolus of modified shape, which had indistinct boundaries or was fragmented, were observed. Atypical mitoses occurred in the spinal tissue (chromosome joints, pyknotic chromosomes), and entirely normal cells were observed as well as damaged cells. This is attributed to the differentiated maturity of the cell at the time of irradiation. The changes caused by irradiation hardly affect the development of the spinal cord. The observed change of spontaneous and reflex movements might be caused by structural damages. The following papers are referred to: A. A. Zavarzin,

Card 3/4

SVIDERSKAYA, M. D.:

Sviderskaya, M. D.: "The effect of copper on certain physiological processes in the sheep with sufficient water in the soil, during various periods of development." Leningrad State Pedagogical Inst imeni A. I. Gertsen. Chair of Botany. Leningrad, 1956. (Dissertation for the Degree of Candidate in Biological Science)

SO: Knizhnaya letopis', No 27, 1956. Moscow. Pages 94-109; 111.

SVIDERSKAYA, M.D.

Effect of copper on the yield of "Golden Rain" oats exposed to shortage of water during the period of grain forming. Uch.zap.Ped.inst.Gerts. 249:245-249 '63. (MIRA 17:12)

1. Leningradskiy gosudarstvennyy pedagogicheskiy institut imeni A.I. Gertsena, Kafedra botaniki.

| 1ST AND 2ND ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | | 3RD AND 4TH ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | |
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| COMMON ELEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | | COMMON VARIABLES | | | | | | | | | | | | | | | | | | | | | | | | | |
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| SVIDERSKAYA, T. A. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>The influence of preliminary stretching on the onset of fatigue in the frog muscle. V. A. Musheiev and T. A. Sviderskaya. <i>Arch. sci. biol.</i> (U. S. S. R.) 38, 587-9 (in English 580)(1935).--Prolonged stretching of muscles by a wt. leads to a state of fatigue. The actual work produced by the muscle is not the contraction, but the recovery after the contraction. W. A. Perlzweig.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div> <div>1ST AND 2ND ORDERS</div> <div>3RD AND 4TH ORDERS</div> </div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| 1ST AND 2ND GROUPS | | | | | | | | | | | | | | | | | | | | | | | | | | 3RD AND 4TH GROUPS | | | | | | | | | | | | | | | | | | | | | | | | | |
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| COMMON ELEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | | SPECIAL ELEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>VIDERSKAYA, T. A.</p> <p>PROCESSES AND PROPERTIES INDEX</p> <p>The role of the motor and sympathetic nerve endings in the use of phosphagen by the muscles during work and their interantagonism during resting metabolism. V. A. Muzhnev, T. A. Videnskaya and Z. I. Shitova. <i>Arch. biol. (U.S.S.R.)</i> 44, No. 3, 77-80 (in English, 80) (1930).—Muscles poisoned with $\text{CH}_3\text{CO}_2\text{H}$ with preliminarily regenerated nerve endings fall into irreversible contraction after rhythmic irritation, using up less than 50% of the available phosphagen (I). With simultaneous degeneration of motor (II) and sympathetic (III) nerve endings, with degenerated II and preserved III and with preserved II and degenerated III the amt. of I remaining in the muscles is 65, 43 and 30%, resp., of normal. The irritability of muscles with degenerated II is lower than that of the controls, while that of muscles with degenerated III or with degenerated II and III is higher than that of the controls. II aids in the disturbance of resting metabolism and muscle structure and aids in the performance of external work, while III restores and supports resting metabolism and the normal condition of muscle structure.</p> <p>S. A. Karjala</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| V. A. MUKHOMYEV, T. I. SVETOMYSLAVSKAYA, and Z. I. SOKOLOVA (Arch. Sci. Med. USSR, 1987, 44, 77-86). | |
| <p>Role of motor and sympathetic nerve endings in use of phosphagen by muscles during work and their interaction during resting metabolism.</p> <p>—In frogs the motor nerve roots of the posterior limb of one side were divided proximally to the entry of the rami communicantes; in another series the rami communicantes only; and in a 3rd series the sciatic nerve in the thigh, were cut. 4 weeks later, when nerve degeneration was complete, moniodoacetate was introduced into the lumbar aco after division of the motor nerve roots of the other side, or of both sides (in the 2nd series). The isolated calf muscles were stimulated until fatigue set in and the remaining phosphagen was determined. The results show that a functional antagonism exists between the motor and sympathetic nerve endings in the muscles and that phosphagen is not the chief supply for energy either for contraction or for recovery in muscle.</p> <p style="text-align: right;">T. T.</p> | |
| <p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p> | |

| COMMON ELEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | | PROCESSING AND PROPERTIES INDEX | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1ST AND 2ND ORDERS | | | | | | | | | | | | | 3RD AND 4TH ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVIDERSKAYA, T. A. | | | | | | | | | | | | | | | | | | | | | | | | | | 11f | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>The influence of the sympathetic nerve on the metabolism of the quiescent skeletal muscle. III. Changes in phosphagen content in the normal and in the iodoacetate-poisoned muscle on stimulation of the sympathetic nerve. V. A. Muzheev, T. A. Sviderskaya and Z. I. Shitova. <i>Arch. sci. biol.</i> (U.S.S.R.) 45, No. 3, 87-91 (in English 92) (1937); cf. <i>C. A.</i> 30, 7183¹.—Stimulation of the sympathetic nerve (I) causes an increase in phosphagen in the normal quiescent muscle and a decrease in the iodoacetate-poisoned muscle. On the basis of previous finding in regard to NH_4 content of muscles under the above conditions, it is assumed that I acts directly upon the formation of adenosinetriphosphoric acid and thus influences glucolysis and phosphagen metabolism. W. A. P.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION | | | | | | | | | | | | | | | | | | | | | | | | | | 11-2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| MATERIALS INDEX | | | | | | | | | | | | | | | | | | | | | | | | | | COMMON VARIABLES INDEX | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1ST AND 2ND ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | | 3RD AND 4TH ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1ST AND 2ND ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | | 3RD AND 4TH ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | |

| 1ST AND 2ND ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | | 3RD AND 4TH ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | |
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| COMMON ELEMENTS | | | | | | | | | | | | | | | | | | | | | | | | | | COMMON VARIABLES INDEX | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>SVIDERSKAYA, T. A.</p> <p><i>ca</i></p> <p>Physiological changes (in muscle) at the poles of a constant polarizing current. V. A. Murheev, T. A. Svider-skaya and Z. I. Shitova. <i>Arch. sci. biol.</i> (U. S. S. R.) 49, No. 3, 93-100 (in English 100-1) (1937).—With the appli-cation of a polarizing current to muscle the following changes were observed: at the anode—a local acceleration of the decompn. of phosphagen with a simultaneous rise of the elec. potential; at the cathode—a local disturbance of the metabolism with a fall of elec. potential. The above changes of elec. potential at both poles are prolonged and reach 20-30 mv.; a few hrs. after the polarizing cur-rent is shut off they fall again to zero. These changes in potential are always greater in a muscle poisoned with iodoacetate than in a normal one. W. A. Perlzweig</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>33001 3000100</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SVIDERSKAYA, T. A.

"The Influence of Ultraviolet Radiation upon the Nature of the Oxidation-Regeneration Processes in the Organism," paper presented at the Scientific Conference of the Leningrad Sanitation Institute, 8-10 May 1956.

U-3,054,017

GALININ, N.F., prof.; SVIDERSKAYA, T.A., kand.med.nauk

Ultraviolet rays of the sun. Zdorov'e 6 no.8:1-3 Ag '60.
(141RA 13:8)

1. Chlen-korrespondent AMN SSSR (for Galinin).
(ULTRAVIOLET RAYS--PHYSIOLOGICAL EFFECT)

SVIDERSKAYA, T.A., kand.med.nauk; ZHUK, Ye.G., nauchnyy sotrudnik;
FILIPSON, I.N., vrach

Utilization of ultraviolet rays of different spectral combinations
for reducing sequelae of radiation injury. Gig.i san. 25 no.2:
27-32 F '60. (MIRA 13:6)

1. Iz Instituta radiatsionnoy gigiyeny Ministertva zdravookhra-
neniya RSFSR.

(RADIATION INJURY prevention & control)
(ULTRAVIOLET RAYS)

L 42967-65 EMB(j)/EHT(u)
ACCESSION NR: AP5007855

S/0241/65/010/002/0059/0066

AUTHOR: Sviderskaya, T. A.

TITLE: Effect of ultraviolet irradiation on the course of radiation sickness

SOURCE: Meditsinskaya radiologiya, v. 10, no. 2, 1965, 59-66

TOPIC TAGS: guinea pig, ultraviolet irradiation, X-ray irradiation, gamma ray irradiation, radiation sickness, radioprotective agent, fractional radiation dose, ultraviolet light source, therapy

ABSTRACT: The present investigation, a continuation of earlier studies, was carried out to determine optimal doses and conditions for ultraviolet irradiation of an organism to ensure highest radioresistance to subsequent ionizing irradiation. Experiments were staged in male guinea pigs using different fractional ultraviolet irradiation doses followed by X-ray irradiation. Ultraviolet irradiation was produced by erythematic luminescent lamps (EUV-15) with a wavelength of 280-380 millimicrons or by a PRK-model burner with a wavelength of 200-380 millimicrons. Animals were exposed to a

Card 1/3

L 42967-65

ACCESSION NR: AP5007855

course of 6 to 15 ultraviolet radiation treatments over a period of 6 to 30 days with single fractional doses ranging from 9 to 54 roentgens $\cdot \text{min}/\text{m}^2$, and then were exposed to a single 450 r X-ray or gamma irradiation dose. In one experimental series the animals were exposed to the X-ray irradiation dose first and then to ultraviolet radiation therapy. The effect of ultraviolet radiation on ionizing radiation damage was determined by survivability, life expectation, weight change, blood morphology, and cholinesterase activity. Findings show that the dose rate and length of treatment as well as the size of the cumulative dose are important in establishing optimal conditions for ultraviolet radiation protective effect. Reduction of the dose rate and extension of the treatment period leads to an attenuated effect. A comparison of ultraviolet radiation sources showed that the long wavelength radiation of erythematic luminescent lamps produces a more clearly expressed protective effect than the integrated flux of a FIK-type burner. Ultraviolet erythematic irradiation in the form of 10 daily treatments with a constant fractional dose of 54 roentgens $\cdot \text{min}/\text{m}^2$ conducted 13 days before exposure to a single 450 r X-ray or gamma-irradiation dose produces a distinctly favorable effect. Ultraviolet irradiation

Card 2/3

L 12967-65

ACCESSION NR: AP5007855

therapy conducted after exposure to X-irradiation attenuates the damaging effect of the latter and increases survivability and life expectation of animals. Results indicate that ultraviolet radiation changes the radioresistance of an organism and can be used as a protective agent. (Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Institut radiatsionnoy gigieny, Leningrad (Institute of Radiation Hygiene, Leningrad)

SUBMITTED: 18Mar63

ENCL: 00

SUB CODE: LS

NR REF SOV: 013

OTHER: 009

Card 3/3

L 28007-66 EWT(m)

ACC NR: AP6018201

SOURCE CODE: UR/0241/65/010/012/0051/0057

AUTHOR: Sviderskaya, T. A.

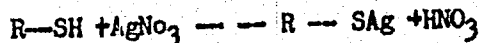
ORG: Leningrad Scientific Research Institute of Radiation Hygiene (Leningradskiy nauchno-issledovatel'skiy institut radiatsionnoy gigiyeny)

TITLE: Utilization of certain biochemical indices for assessment of the effect of ionizing radiation on the organism

SOURCE: Meditsinskaya radiologiya, v. 10, no. 12, 1965, 51-57

TOPIC TAGS: rabbit, experimental animal, ionizing radiation, enzyme, biologic metabolism, blood, radiation sickness, radiation biologic effect, x ray irradiation

ABSTRACT: Mass observations of persons who are in constant contact with ionizing radiation are reported. Experiments on guinea pigs and rabbits were utilized in order to ascertain the validity of the premise that metabolic changes in the irradiated organism characterized by a decrease in the content of SH groups and a decline of alkaline phosphatase activity in the blood are valuable indices of the effect of ionizing radiation on the organism. The method of amperometric titration (Kolthoff and Harris) based on the reaction of Ag ions with the SH groups of thiol compounds and tissue proteins was used to determine the SH content in whole blood:



Card 1/2

UDC: 617-001.28-07:616-008.931-074

L 28007-66

ACC NR: AP6018201

The modified King or Bessey method was used to determine the alkaline phosphatase activity in the blood. Chronic radiation sickness was induced in the animals by exposing them to the action of x-rays in doses of 450-500 r. A decrease in the blood content of SH groups was already noted on the second day after the irradiation; it reached a minimum by the 15th day (30 percent of initial level); the content of the SH groups then began to increase, reaching almost its initial level by the 35th day. A sharp decline in the alkaline phosphatase activity in the blood was noted at the same time, reaching a maximum by the 15th day after the irradiation. Observations of persons who are in constant contact with small doses of ionizing radiation also revealed definite shifts in the content of SH groups and the activity of alkaline phosphatase in the blood. The experiments on the animals and the observations of persons constantly in contact with ionizing radiation thus established the fact that biochemical reactions characterized by changes in the blood content of SH groups and the decline in activity of alkaline phosphatase of the blood are sensitive indicators of the development of chronic radiation affections in the organism. Orig. art. has: 2 figures, 3 tables. /JPRS/

SUB CODE: 06 / SUBM DATE: 30Sep64 / ORIG REF: 013 / OTH REF: 011

Card 2/2 *pls*

SVIDERSKAYA, YE. K.

PA 18/49T27

USSR/Medicine - Antibiotics
Medicine - Infection, Therapy

Sep/Oct 48

"Local Application of Gramicidin in Post-Partum
Infections," Docent B. A. Boyarinova, Ye. K.
Sviderskaya, Obstet and Gynecol Clinic, Krasnoyar
Med Inst, and Krasnoyarsk Inst of Epidemiol and
Microbiol, 2 pp

"Akusher i Ginekol" No 5

Report of observations. Concludes that local
application of gramicidin promotes more rapid
cleansing of localized infected wound surface
and leads to a favorable change in microflora in

18/49T27

USSR/Medicine - Antibiotics (Contd) Sep/Oct 48

post-partum cases. Use of gramicidin also per-
missible where infection extends beyond uterus.
Antibiotic treatment should begin early and be
continued over a fairly prolonged period.

18/49T27

| 1ST AND 2ND CHOICES | | PROCESSES AND PROPERTIES INDEX | | 3RD AND 4TH CHOICES | |
|---|--|--|--|---------------------|--|
| CA | | <p>Dilatometric investigation of pure zinc. A. A. Mozhay and Z. A. Spidenkaya (Int. Machine Knowledge, Acad. Sci. U.S.S.R.). <i>Bull. acad. sci. U.R.S.S., Classe sci. tech.</i> 1945, 209-11. Repeated heating from room temp. to the m.p. of the sample of freshly cast Zn paired with a standard of pure Al decreased the slope of the dilatometric curve from 40×10^{-6} to $15-20 \times 10^{-6}$. The slope of the curves decreased only after repeated heating (at 400°) of samples subjected to plastic deformation. This change in the slope of the dilatometric curve was caused by recrystallization taking place during the heating process. The monocrystal of Zn possesses various coeffs. of expansion, depending on the direction with respect to the main axis of the hexagonal prism (at $20-400^\circ$ 60×10^{-6} in the direction parallel to the main axis and 16×10^{-6} in the direction perpendicular to the main axis. It is supposed that in polycryst. Zn samples the change in the coeff. of linear expansion is connected also with the change in the crystallographic orientation. The initial orientation is such that the volumetric changes taking place on heating the sample are chiefly in the direction close to parallel with respect to the main axes of hexagonal crystals and the coeff. of linear expansion of Zn exceeds considerably that of Al whose coeff. of linear expansion at $0-300^\circ$ is 25×10^{-6}. As a result, dilatometric curves form a large angle of the slope with the horizontal. The sharp changes in the shape of the dilatometric curve on heating can be used as an indirect criterion of the hexagonality of the lattice of the principal phase at the given temp. 3 references.</p> <p>W. R. Henn</p> | | 2 | |
| ASH-15A METALLURGICAL LITERATURE CLASSIFICATION | | | | | |
| SECTION I | | SECTION II | | SECTION III | |
| SUBSECTION I | | SUBSECTION II | | SUBSECTION III | |
| SUBSUBSECTION I | | SUBSUBSECTION II | | SUBSUBSECTION III | |

| (1) AND (2) INDEX | | PROCESSES AND PROPERTIES INDEX | | (3) AND (4) INDEX | |
|--|---|--|---------|-------------------|--|
| <div style="border: 1px solid black; padding: 2px;">CA</div> | <div style="border: 1px solid black; padding: 2px;">9</div> | <p>Superplasticity in zinc-aluminum alloys. A. A. Koch- var and Z. A. Sviderskaya. <i>Bull. acad. sci. U.R.S.S., Classe sci. tech.</i> 1945, 821-4 (in Russian); cf. C.A. 41, 1589c. — Alloy with 75-85% Zn quenched in water after 2 hrs. at 375-400° show unusually low hardness as compared with both higher-Zn and lower-Zn alloys, at all temps. from room to 400°; e.g., 80% Zn, load 3 kg., diam. of ball 2.5 mm., at room temp., 150, 300°, Brinell hardness $H = 36$, 7, 1 kg./sq. mm., resp. A further anomaly appears be- yond 300°, H rises to a max. of about 5 at about 330° and falls again on further rising temp.; this max. cor- responds to eutectoid transition and is linked with forma- tion of the β-solid soln. Both the abnormally low H and the max. at 330° are absent when the quenching is done from a temp. lower than 300°. All 3 H isotherms at 20, 100, and 300°, over the whole range of compn. of alloys, all quenched after 2 hrs. at 375° show a min. at about 18- 20% Al, max. at 60%; the latter is very nearly the same ($H = 85$ kg./sq. mm.) at 20 and at 100° but much lower ($H = 15$) at 300°; the min. H falls from 12 to 15 to 1 at 20-100-300°. The superplastic alloy cannot be a mixt. of solid solns. of Al and Zn. It is seen that in a definite structural condition, the nature of which is as yet unclear, an alloy can be considerably softer than its components. Rupture tests of the softest alloy, including detn. of ten- sile strength, elongation, and contraction, at 300°, ex- clude the possibility of softening through vol. change and porosity, and confirm actual abnormally high plasticity. N. Thon</p> | | | |
| ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION | | E2 | | | |
| RECORDS | RECORDS | RECORDS | RECORDS | | |
| RECORDS | RECORDS | RECORDS | RECORDS | | |

BOCHVAR, A. A., SVIDENSKAYA, Z. A.

Corresponding Members, Academy of Sciences, USSR, Institute of Machine Studies, Academy of Sciences, USSR. "Effect of Excess Plasticity in Alloys of Zinc with Aluminum." Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 9, 1945. Submitted 3 Jul 1945.

Report U-1582, 6 Dec 1951.

| PROPERTY AND PROPERTY INDEX | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 1ST AND 2ND ORDERS | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>On the Question of the Abnormally High Plasticity of Certain Zinc-Aluminum Alloys. A. A. Kocher and Z. A. Sytkerakova (<i>Izv. Akad. Nauk S.S.S.R., Tekhn.</i>, (7), 1001 (1960). [In Russian]. Zinc-aluminum alloys containing 75-85% zinc, on heating to 100-300°C, after preliminary quenching, become many times softer and more plastic than the pure component metals and the alloys containing 0-75 and 85-100% zinc, heated to similar temp. The unusual increase in plasticity is observed with a granular structure but not with a lamellar one. The following explanation of the phenomenon is given. Plasticity depends on the mechanism of deformation, on the initial capacity for deformation, and on the possibility of this capacity being restored during the deformation process by the removal of work hardening and the "healing" of submicroscopic sources of failure which arise in deformation. If there is a sufficiently large mutual solubility of the component elements of the alloy and one which changes rapidly with temp., mutual solution takes place on account of the local increase in temp., and the reverse process of separation occurs on cooling. In this way, as a result of the transference of atoms through the solution, "healing" of the sites of incipient failure can take place. - N. A.</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>ASY 51A METALLURGICAL LITERATURE CLASSIFICATION</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>REGION: 51A</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>CLASSIFICATION: 51A</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>DATE: 1960</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

Expansion of some alloys on crystallization. A. A. Bochvar, Z. A. Sviblerskaya, and E. K. Korbut. *Fiz. metal. i metallofiz.* 1947, 409-17 (in Russian). —The reality of the expansion taking place in the initial stages of crystn., prior to the final contraction, was confirmed and the effect found to be much greater than hitherto assumed. Measurements were made on samples 4 cm. long. Al-Zn alloys with 30, 60, 70, 75, 77, 78, 80, 90% Zn showed linear expansions $\epsilon = 0.13, 0.30, 0.58, 0.69, 0.94$ (max.), 0.73, 0.40, 0%, resp. Thus, there is no simple direct relation between the magnitude of ϵ and the length of the crystn. interval. In Al-Mg alloys with 5, 10, 15, 25, 30, 40% Mg, $\epsilon = 0.175, 0.200, 0.330$ (max.), 0.025, 0, 0% (av. of 3 detns. on 40-g. samples, casting temp. 100° above the liquidus temp.); the max. of ϵ lies between the compn. of max. crystn. interval and the eutectic compn. Similar results were found in Al-Cu alloys, 5, 10, 20% Cu, $\epsilon = 0.107, 0.157$ (max.), 0.075%, and in Al-Si alloys, 2, 4, 6, 12% Si, $\epsilon = 0.05, 0.141$ (max.), 0.110, 0.005%. The effect of the excess Δt of the casting temp. over the temp. t of the liquidus is illustrated by Al 85-Mg 15 ($t = 570^\circ$); $\Delta t = 0, 100, 150, 200^\circ$, $\epsilon = 0.262, 0.330, 0.500, 0.582\%$; thus, ϵ increases with superheating; Al 23-Zn 77 ($t = 487^\circ$) gives less consistent results, probably owing to evapn. of Zn and shift of compn. at high Δt . Satn. with H₂O vapor increased ϵ 2-3 times in Al-Si with 2-6% Si. Pure Sn, Zn, Pb, Mg, and Bi show

no ϵ . With pure Al, cast at 700 and 760°, small ϵ effects (0.050 and 0.025%, resp.) were observed reproducibly; this may be due to the particularly strong tendency of Al to dendritic crystn.; the absence of ϵ in Bi is striking and is no doubt due to compensation of expansion by a change of the level of the liquid metal in the isothermal process; the same explanation applies to the absence of ϵ in eutectic alloys. However, both pure Bi and eutectic alloys do show a slight ϵ if the free surface of the cast is frozen by application of a massive plate. Forewarming of the die and other devices results in slower cooling and decreases ϵ somewhat. In Al 23-Zn 77 and in Al 85-Mg 15, the expansion takes place in the temp. interval 460-400° and 505-470°, resp., i.e. always in the region between the liquidus and the solidus.

N. Thon

Evaluation B-78945

ALB-51A METALLURGICAL LITERATURE CLASSIFICATION

SVIDERSKA, Z. A.

SVIDERSKA, Z. A. -- "RELATION OF THE CASTING PROPERTIES OF ALLOYS TO THEIR CRYSTALLIZATION CHARACTERISTICS." SUB 9 DEC 52, INST OF METALLURGY IMENI A. A. BAYKOV (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

SVIDERSKAYA, Z.A.

USSR

Effect of Constituents Upon Heat
Resistance of Aluminium

Inv. Akad. Nauk. Otd.
Tekh. Nauk
(2), 46-51
1954

I.A. Rochvar, Z.A. Sviderskaya,
L.M. Kyshakova

U.S.S.R.

The effect of iron and silicon upon heat resistance of aluminium. The latter was being determined by the method of consistent hardness (impression method). Tests were carried out with aluminium with various quantities of impurities in a cast form as well as after a 100-hour stabilisation at the temperature at which the tests were to be made. At room temperature, under the conditions of the tests, no creep was observed, irrespective of the quantity of inclusions. Absolute hardness, however, increased with higher percentage of impurities. At higher temperatures (300 deg. C) aluminium showed various degrees of softening depending on the amount of constituents. Aluminium A2 had best heat resistance where total constituents amounted to 0.7%. Microscopic tests showed that the presence of $FeAl_3$, apart from solid solutions and triple compounds, raised heat

resistance considerably. The effect of iron upon heat resistance of aluminium is to be explained, apparently, by the fact that $FeAl_3$ which is accumulating along grain boundaries is halting the process of re-crystallisation.
(21.1.1)

SVIDERSKIYA, Z. A.

✓ 14338* Use of Radiographic Method for Investigating the
Structure of Magnesium Alloys. *Primenenie metoda radi-
ografii dlia issledovaniia struktury magniievykh splavov.*
(Russian.) M. E. Drits, Z. A. Sviderskiya, and E. S. Kadaner.
Zaodskaya Laboratoriya, v. 21, no. 7, July 1955, p. 831-833 +
2 plates.
MC
2 Macro- and micro-structures (dendritic and other formations)
of two- to four-component Mg alloys, after casting and an-
nealing. Micrographs. 1 ref.

of

SVIDERSKAYA, Z. A.

Drits, M. Ye., Sviderskaya, Z. A., Kadaner, E. S., "Study of the Structure of Magnesium Alloys, Containing Calcium by the Method of Radiography."

in book Research on Heat Resistant Alloys, pub by Acad. Sci. USSR, Moscow, 1956, 160 pp.

Inst. Metallurgy im A. A. Baykov

SVIDERSKAYA, Z.A.

Category : USSR/Solid State Physics - Phase Transformation in Solid Bodies E-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3843

Author : Drita, M.Ye., Sviderskaya, Z.A., Kadaner, E.S.

Title : Investigation of the Structure of Magnesium Alloys Containing Calcium,
Using Radiographic Methods

Orig Pub : Issledovaniya po zharoprochnym splavam. M., AN SSSR, 1956, 84-90

Abstract : Using Ca^{45} (2-3 millicurie/kg of alloy), a radiographic investigation was made on the macro and micro structures of the following alloys: Mg-Ca, Mg-Mn-Ca, Mg-Mn-Al-Ca. The macrostructure of the alloys, exhibited after an exposure of 5-6 days on "XX" x-ray film, indicates that the crystallization has a dendrite character. Increasing the Ca content increases the irregularity of its distribution in the alloy. The microstructure was investigated using specimens 100-200 microns thick with the aid of MR nuclear plates after 10-15 days' exposure. Magnifications (up to x750) were obtained with a metallographic microscope using transmitted light. The calcium in the Mg-Ca alloys is concentrated in the interaxial space. Casting the alloys in a heated metallic mold gives a more uniform distribution of the calcium, than casting in sand. An investigation of the

Card : 1/2

SVIDERSKAYA, Z.A.

SVIDERSKAYA, Z.A.; DRITS, M.Ye.; KADANER, E.S.

Use of radioactive isotopes in studying microheterogeneity of
magnesium alloys. Trudy Inst.met.AN SSSR no.1:249-257 '57.
(MIRA 10:11)

(Magnesium alloys) (Radioisotopes)

613

AUTHORS: Sviderskaya, Z.A., Drits, M.Ye., Candidates of Tech. Sc. and Kadaner, E.S., Ing. (Institute of Metallurgy, Ac.Sc. U.S.S.R. imeni A.A. Baykov).

TITLE: Influence of the speed of crystallisation on the micro non-uniformity of magnesium alloys. (Vliyaniye skorosti kristallizatsii na mikroneodnorodnost' magniyevykh splavov).

PERIODICAL: "Metallovedenie i Obrabotka Metallov" (Metallurgy and Metal Treatment), 1957, No.5, pp.23-29 (U.S.S.R.)

ABSTRACT: The structural micro non-uniformity of calcium containing magnesium alloys was investigated by using radioactive calcium and for establishing the relation between the speed of cooling of magnesium alloys and the intradendritic liquations, the method of quantitative autoradiography was utilised, which is based on determining the contents of the individual elements in the micro-volume of the alloy by photo-metering of radio-autographic exposures (11, 12). Characteristic curves were preliminarily plotted which express the relation between the intensity of radioactive radiation and the blackness density of photo-emulsions. By means of these curves the ranges of blackening were measured for which there is a direct relation between the density of blackening and the

013

Influence of the speed of crystallisation on the
micro non-uniformity of magnesium alloys. (Cont.)

concentrations of the radio-active calcium. The blackness density was measured at 500 points. The micro non-uniformities were studied on three series of castings for which a change in the speed of cooling was achieved by various methods; for one series binary magnesium and calcium alloys were cast into metal moulds which were pre-heated to various temperatures; the second and third series of castings consisted of quaternary magnesium-manganese-aluminium-calcium alloys for which a change in the cooling speed was achieved by using moulds of different materials or moulds of different cross sections. Fig.1 shows graphs of the blackness density for magnesium-calcium alloys; Fig.2 shows the distribution of the calcium for various cooling speeds; Fig.3 shows micro-radiograms of Mg-Mn-Al-Ca alloys cast into earthen moulds of various cross sections, whilst Fig.4 shows graphs of the dependence of the micro non-uniformities on the cooling speed. In the case of binary magnesium-calcium alloys, the curves do not pass through a maximum, i.e. the micro non-uniformity of the structure decreases continuously with increasing speed of cooling. Investigation of the microstructure of the investigated alloys indicates that in all cases the quantity of the

Card 2/3

613

Influence of the speed of crystallisation on the micro non-uniformity of magnesium alloys. (Cont.)

second phase was very small and, therefore, from the point of view of the structure the studied alloys were near to single-phase solid solutions. The fact that the photomentering of the micro-radiograms was carried out at relatively small magnifications and that the inclusions of the manganese component in Mg-Mn-Al-Ca alloys do not produce blackening on the micro-radiograms leads to the assumption that the derived relations reflect the character of the distribution of the calcium resulting from intra-crystallite liquations during crystallisation of the solid solution. The method of quantitative radiography permits not only evaluation of the scale of the observed micro non-uniformities during casting of Ca containing magnesium alloys but it also confirms experimentally the general character of the changes in the micro non-uniformity with changing cooling speeds. At an equal cooling speed various materials will have an inclination to a more or less developed dendritic crystallisation and this will obviously affect the micro non-uniformities which occur during solidification.. Change in the cooling speed will affect appreciably the heat resistance of the alloy. The highest ultimate strength will be obtained for medium cooling speeds, i.e. in the case of maximum heterogeneity of the cast alloy. 2 Tables, 4 Figures; 11 Russian and 1 English references.

Card 3/3

SVIDERSKAYA, Z.A.

24-6-3/24

AUTHORS: Drits, M. Ye., Kadaner, E.S., Sviderskaya, Z.A. and Shcherbinina, Ye. L. (Moscow).

TITLE: A study of the distribution of iron in aluminium using the method of autoradiography. (Izucheniye raspredeleniya zheleza v alyuminii metodom avtoradiografii).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.6, pp.12-17 (U.S.S.R.)

ABSTRACT: Results are reported of an investigation into the distribution of iron in aluminium, and also its redistribution on heating. The method of quantitative autoradiography (4,5) has allowed an estimate to be made of the change in micro-nonuniformity in the structure of aluminium as the iron content is increased. The radio-isotope Fe^{59} was used in a 99.985% pure aluminium. Figs. 1 and 2 show microradiograms of various Al-Fe alloys. The blackened areas show the presence of iron. As can be seen, when very small amounts of iron are introduced, areas of different structural character are observed even in a given specimen (Fig.1a and 6). Evidently, this is connected with the larger size of grains which are visible in the plane of the section. The iron is concentrated not only on the boundaries of the grains but

Card 1/4

24-6-3/24

A study of the distribution of iron in aluminium using the method of autoradiography. (Cont.)

also within them. The introduction of iron into aluminium in larger quantities (up to tenths of a percent) leads to a break up of the grains and appearance of a clear dendritic structure with iron distributed in the interaxial spaces (Fig.1B). Fig.2 shows (for comparison) the microstructure of the same specimens, shown up by the usual etching. There is a practically total absence of solid solutions in the system Al-Fe, but a separation of the compound FeAl_3 is observed in cast samples, beginning at thousandths of a percent. Two coefficients are defined:

$$K = (100-n)/100 \quad \text{and} \quad C = C_{\text{max}}/C_{\text{min}}$$

where n is the number of micro-volumes, per 100 measured micro-volumes, which have an iron concentration equal to the average iron concentration in the specimen; C is the ratio of the maximum to minimum concentrations of iron in separate micro-volumes in the region investigated. Photometric measurements were carried out using a micro-photometer having a square aperture of 1 mm^2 and a magnification of 24 times.

Card 2/4

24-6-3/24

A study of the distribution of iron in aluminium using the method of autoradiography. (Cont.)

Fig.3 shows plots of the average number of cells (in %) versus iron concentration for three different mean concentrations (0.0085%, 0.19% and 0.74% Fe). Table 2 gives the values of K and C for various alloys, and a plot of K and C versus percentage of iron is given in Fig.4. Both K and C fall at first and then tend to reach a steady value. The "knee" of the C-curve corresponds to the change in the character of the distribution of iron in aluminium as can be seen by comparing Figs. 1B, 1a and 16. The effect of prolonged heating at 605 C (up to 100 hours) is shown in Figs. 5 and 6. In Fig.5, K and C are plotted versus heating time in hours. Fig.6 shows microradiograms of Al + 0.194% Fe after heating at 605 C for 50 and 100 hours respectively. All the data indicate that the micro-nonuniformity in the distribution of iron in aluminium, which is produced during the process of crystallisation, is very stable and is not much affected by homogenizing treatment. The large size of the surfaces of division at which the evolution of the intermetallic compound $FeAl_3$ takes place produce favourable conditions for blocking sliding processes which develop as a result of plastic deformation and this apparently has a

Card 3/4

24-6-3/24

A study of the distribution of iron in aluminium using the method of autoradiography. (Cont.)

favourable influence on the creep resistance of aluminium and aluminium alloys in presence of iron.

There are 6 figures, 3 tables and 6 references, 5 of which are Slavic.

SUBMITTED: February 26, 1957.

Card 4/4

SVIDERSKAYA, Z. A.: KADANER, E. S.: DRITS, M. Ye.; and VASHCHENKO, A. A.

"Magnesium Alloys for Performance at Elevated Temperatures"

Light Alloys. no. 1: Physical Metallurgy, Heat Treatment, Casting, and Forming;
Principal Reports of the Conference, Moscow, Izd-vo AN SSSR. 1958. 497 P.
(2nd. All-Union Conf. on Light Alloys, 1955)

SVIDERSKAYA, Z. A.

18(0) PAGE I BOOK EXPLANATION SOV/1728

Академика наук СССР. Институт металлургии

Современные проблемы металлургии (Modern Problems in Metallurgy)
Москов, Изд-во АН СССР, 1958. 640 p. 3,000 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of
Sciences; Eds. of Publishing House: V.S. Kshenevnikov, and
A.M. Derzov; Tech. Ed.: T.V. Polyakova.

PURPOSE: This book is intended for scientific and technical per-
sonnel in the field of metallurgy.

COVERAGE: This is a collection of articles on certain aspects of
Soviet metallurgy. The book is dedicated to Academician
Ivan Pavlovich Bardin on the occasion of his 75th birthday. The
book is divided into seven parts. The first part consists of
two articles presenting a brief account of the biography and
professional activity of the Soviet metallurgist. It includes an
article by John Chipman, Nicholas Grant, and John Elliott (M.I.T.,
USA) describing their meeting with Bardin in Moscow and also his
visit to the United States. The second part consists of three
articles and deals with raw materials and fuels for the Soviet
metallurgical industry. The third part represents the major
portion of the book. It consists of 25 articles dealing with
the various aspects of the metallurgy of pig iron and steel.
The fourth part consists of two articles treating the metal-
lurgy of nonferrous metals. The fifth part consists of three
articles on the forming of metals. The sixth part consists of
eight articles discussing certain aspects of physical metal-
lurgy. The last part deals with general problems in the field
of metallurgy. References are given after each article. No
personnel are mentioned.

TABLE OF CONTENTS:

Modern Problems in Metallurgy

FORMING OF METALS

Pavlov, I.M. [Corresponding Member, AS USSR, Doctor of Technical
Sciences, Metallurgical Institute named A.A. Baykov, AS USSR].
The Problem of Metal Economy in the Rolling Industry 499

Tselikov, A.I. [Corresponding Member, AS USSR, Tselikvash (Gen-
eral) Scientific Research Institute of Technology and Machin-
ery] Tselikvash Type Mills Featuring New Rolling Processes 471

Aleksandrov, P.A. [Doctor of Technical Sciences, Ukrainian
Institute of Metals]. Modernization of Blooming Mills 500

SCIENCE OF METALS

Beehler, A.A. [Academician, N.Ye. Zhits, and Z.A. Sviderskaya
(Candidate of Technical Sciences, Metallurgical Institute
named A.A. Baykov, AS USSR)]. The Nature of Strengthening
Magnesium Alloys of the Mg-Al-Ca System at Elevated
Temperatures 533

Card 10/12

SVIDERSKAYA, Z. A.

24-2-20/28

AUTHORS: Drita, M.Ye, Kadaner, E.S. and Sviderskaya, Z.A.(Moscow)

TITLE: Influence of the micro non-uniformity of alloys on their behaviour at elevated temperatures. (Vliyaniye mikro-neodnorodnosti splavov na ikh povedeniye pri povyshennykh temperaturakh).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, No.2, pp. 139-142 (USSR).

ABSTRACT: Bochvar (Refs.1 and 2) has pointed out that heterogenisation of the structure determined by the distribution and the shape of the separations of the hardening phases and insoluble admixtures are important for ensuring a high heat resistance of cast alloys. The authors made an attempt to investigate the influence of structural micro non-uniformities on certain properties of magnesium and, particularly, of aluminium alloys at elevated temperatures. In the given case the micro non-uniformity is understood to be the total non-uniformity in the distribution of one or another of the alloying elements and in the micro-volumes of the solid solution as well as in insoluble secondary crystallising phases. On the basis of results obtained with radio-active tracers and

Card 1/4 quantitative autoradiography, the degree of micro

24-2-20/28

Influence of the micro non-uniformity of alloys on their behaviour at elevated temperatures.

non-uniformity of the alloys is characterised by two coefficients K and C which are calculated from the frequency distribution curve as described in an earlier paper of the authors (Ref.3). On the example of an alloy of the system Mg-Mn-Al-Ca the influence was investigated of distribution of Ca on the heat resistance and the ductility, since small additions of Ca have a great influence on the mechanical and the heat resistance characteristics of these alloys. The micro non-uniformity of the alloy was changed by changing the crystallisation speed during casting, using earth moulds of various cross sections. Radio-active calcium of a quantity of 2 to 3 mCu per kg was introduced. From the cast material specimens were produced for testing the long duration strength and the impact strength at 250°C. A quantitative evaluation of the micro non-uniformity and the relations governing the changes in the micro-non-uniformity with varying crystallisation speeds was made in earlier work of the author (Ref.3) for the same alloy under similar casting conditions. In the case under consideration, the Ca content amounted to 0.22%

Card 2/4

24-2-20/28

Influence of the micro non-uniformity of alloys on their behaviour at elevated temperatures.

and the micro non-uniformity represented the non-uniform distribution of the Ca in the micro-volumes of the solid solution since the quantity of the second phase was very low and was detected microscopically only at magnifications of 800 to 1000 times. The results of these experiments are entered in Table 1 and graphed in Fig.1 (micro non-uniformity coefficients K and C, long duration strength σ_{100} kg/mm², impact strength kgm/cm² as functions of the crystallisation speed during solidification, °C/min). The results of experiments aimed at determining the influence on the heat resistance of the redistribution of Ca in the structure caused by various conditions of deformation are entered in Table 2 and graphed in Fig.3 for reductions (by pressing) of 52, 76 and 86%. It can be seen that the change in the heat resistance under the influence of deformation is linked with the change of the micro non-uniformities; with increasing reductions the dendritic structure will be disrupted and the components of the alloy will be broken up into finer particles which leads to an intensification of the creep processes. Since the stability

Card 3/4

24-2-20/28

Influence of the micro non-uniformity of alloys on their
behaviour at elevated temperatures.

of the properties of cast alloys at elevated temperatures depends to some extent on the stability of the initial structure, the authors compared the structural changes taking place under the influence of heating with the heat resistance of binary alloys of aluminium with iron and of magnesium with Ca. The results of these tests are entered in Table 3 and graphed in Fig.5. There are 5 figures, 3 tables and 4 references, all of which are Russian.

SUBMITTED: July 11, 1957.

AVAILABLE: Library of Congress.

Card 4/4

SOV/137-58-9-20061

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 279 (USSR)

AUTHORS: Drits, M.Ye., Sviderskaya, Z.A., Kadaner, E.S.
Vashchenko, A.A.

TITLE: Magnesium Alloys for Work at Elevated Temperatures (Magniyevyie splavy dlya raboty pri povyshennykh temperaturakh)

PERIODICAL: V sb.: Legkiye splavy. Nr 1. Moscow, 1958, pp 147-156

ABSTRACT: MA9, a new Mg alloy (A) based on the Mg-Mn system, plus small additions of other elements, is developed. In heat resistance when cast, MA9 is superior to all the standard foundry A and the majority of A containing the rare elements. At room temperature, the mechanical properties of the cast A are below standard: σ_b 14-16 kg/mm², δ 4-6%. In the extruded condition, MA9 combines superior mechanical properties at room temperature: σ_b 30-32 kg/mm², σ_s 28-29 kg/mm², δ 7-8%, with adequate heat resistance σ_{200}^{100} 7-9 kg/mm² and σ_{250}^{100} 5 kg/mm². Pilot-plant tests of the properties of MA9 with semifinished products from

Card 1/2

SOV/137-58-9-20061

Magnesium Alloys for Work at Elevated Temperatures

continuous-casting ingots show the minimum longitudinal values of σ_b for sheet 0.8-3.0 mm thick, and for extruded sections and rods, to be 26 kg/mm². The heat-resistance characteristics obtained at 200°C with specimens of extruded semifinished products are: σ_{100} 7-8 kg/mm², $\sigma_{0.2/100}$ 2.9 kg/mm², and at 250° σ_{100} 5 kg/mm², and $\sigma_{0.2/100}$ 1.7 kg/mm². Comparison of the properties of MA9 A with those of standard A (MA2, MA5, MA8, VM17, VM65-1) shows that at room temperature MA9 has higher strength characteristics than MA2, MA8, and VM17, and that at above 150° the strength of MA9 exceeds those of the above-indicated A. The advantage of MA9 alloy is manifested particularly in terms of σ_s , which at 150° is 65% higher than that of MA8. MA9 A contains no rare elements or elements in short supply, does not need heat treatment, is not subject to corrosion cracking under stress, and undergoes less oxidation in the molten state than do other Mg alloys. A characteristic peculiarity of MA9 A is the small level of softening which it undergoes after annealing. The good engineering properties of MA9 when subjected to pressworking make possible its use for a wide variety of semifinished products. The satisfactory mechanical properties of MA9 at room and elevated temperatures make it suitable for a wider range of uses in aircraft structures than other Mg A. E.K.

Card 2/2 1. Magnesium alloys--Thermodynamic properties 2. Heat resistant alloys--Development

DRITS, M.Ye.; SVIDERSKAYA, Z.A.; KADANER, E.S.

Effect of the distribution of alloying elements on the behavior of
alloys at high temperatures. Issl. po zharopr. splav. 3:303-309

' 58. (MIRA 11:11)
(Alloys--Metallography) (Metals at high temperatures)

SOV/24-58-5-22/31

AUTHORS: Drits, M. Ye., Kadaner, E. S. and ~~Sviderskaya, Z. A.~~

TITLE: Variation of Micro-Heterogeneity of Alloys in Relation to the Character of the Interaction Between Their Components (Izmeneniye mikroneodnorodnosti splavov v svyazi s kharakterom vzaimodeystviya komponentov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 120-124 (USSR)

ABSTRACT: The effect of composition on the degree of micro-heterogeneity in the Al-Fe, Al-Zn, Mg-Ca and Mg-Zn alloys was investigated by the radioactive tracer technique. Only the Al- and Mg-rich alloys with less than 0.74% of the alloying element were studied, particular attention being paid to maintaining a constant rate of cooling through the crystallisation range when the experimental ingots were prepared. The degree of heterogeneity was expressed in terms of two coefficients: Coefficient K - indicating the total number of deviations from the nominal composition, and coefficient C - measuring the maximum deviation from the nominal composition of the alloy. The results (tabulated and reproduced in the form of graphs showing the variation of K and C with the composition) were correlated with the corresponding portions of the

Card 1/3

SOV/24-58-5-22/31

Variation of Micro-Heterogeneity of Alloys in Relation to the
Character of the Interaction Between Their Components

equilibrium diagrams of the investigated systems and with
the microstructure of the studied alloys. It is shown
that:

(1) The absolute values of K and C are higher for systems
whose components are mutually insoluble in the solid
state (Al-Fe) than for those which form series of solid
solutions.

(2) When the solidification range of the alloys changes
slowly with the changing composition (Al-Fe, Al-Zn systems)
K and C remain practically constant.

(3) The variation of K and C is most complex in systems
with a limited solid solubility range, particularly if the
solidification range increases rapidly with the rising
content of the alloying element (e.g. Mg-Ca system). The
K, C/composition curves for such systems pass through a
maximum at a composition at which the proportion of the
second phase present in the alloy reaches a certain
minimum value. This indicates that in the two-phase
regions of compositions micro-heterogeneity is determined
mainly by the manner in which the second phase is

Card 2/3

SOV/24-58-5-22/31

Variation of Micro-Heterogeneity of Alloys in Relation to the
Character of the Interaction Between Their Components

distributed, while in the single-phase regions the
segregation within the solid solution grains plays the
most important part.

There are 5 figures, 1 table and 6 references, 3 of
which are Soviet, 3 English.

ASSOCIATION: Institut metallurgii im. A. A. Baykova AN SSSR
(Metallurgy Institute imeni A. A. Baykov, Ac.Sc. USSR)

SUBMITTED: October 21, 1957

Card 3/3

SOV/24-58-8-16/37

AUTHORS: Drits, M. Ye., Mal'tsev, M. V., Padezhnova, Ye. M. and
Sviderskaya, Z. A. (Moscow)

TITLE: Influence of Thorium on the Heat Resistance of
Magnesium and Some of its Alloys (Vliyaniye toriya
na zharoprochnost' magniya i nekotorykh ego splavov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
Nauk, 1958, Nr 8, pp 93-97 (USSR)

ABSTRACT: According to published Western data (Refs.1-3), magnesium
alloys with additions of 2 to 3% thorium have a high
creep stability in the temperature range 300 to 350°C and
satisfactory mechanical and technological properties.
The authors of this paper applied the method of investi-
gation of the short duration and the long duration
hardness for the binary alloys of magnesium and thorium
and for certain ternary alloys containing in addition to
thorium, Ce, Mn, Al, Ca and Zn. The results of the
hardness measurements of the binary alloys of magnesium
and thorium in the as-cast state and after stabilisation
at 300°C are entered in Table 1. The hardness values are
entered in Table 2 for the same specimens after quenching
in water at 565°C, at which temperature the specimens were

Card 1/5

SOV/24-58-8-16/37

Influence of Thorium on the Heat Resistance of Magnesium and Some of its Alloys

held for sixteen hours; heating of the specimens was effected in quartz glass ampules from which air was evacuated and which were filled with sulphur powder. The influence of thorium on the hardness of the binary Mg-Th alloys at room and elevated temperatures is graphed in Fig.1. The diagram of state of the Mg-Th system, based on the micro-structural and thermal analyses, is reproduced in Fig.2; the diagram is of the eutectic type. Fig.3 shows reproductions of the micro-structure of Mg-Th alloys for 3 and 20% Th respectively and magnifications of 315 and 1000 times. The obtained results indicate that Mg-Th alloys have a high micro-hardness (306 kg/mm^2) which approaches in value the micro-hardness of Mg_2Ni , MgNi_2 , etc; the micro-hardness of the eutectic is 118 kg/mm^2 , the micro-hardness of the solid solution is 74 kg/mm^2 . The effect of hardening of these alloys during heat treatment was investigated in detail on an alloy containing 10% Th. Fig.4 shows the curves of the kinetics of hardening of this alloy in a coordinate system hardness vs. time; the progress of

Card 2/5

Influence of Thorium on the
and Some of its Alloys

Heat Resistance

SOV/24-58-8-16/37
of Magnesium

ageing was investigated for ten hours. However, it was found that in all cases the hardness hardly changed after the first five hours. The highest hardness was obtained as a result of artificial ageing for three hours at 250°C. On the basis of the obtained results heat treatment regimes were selected for comparative investigation of the short duration and long duration hardness at 300°C; the obtained data are entered in Table 3. The hardness of ternary alloys was investigated under conditions similar to those pertaining to the binary alloys of Mg with Th; the results of these investigations as well as the compositions of the investigated alloys are summarised in Table 4. The best results at room temperature were obtained by alloying the Mg-3% Th alloy with Ce; the hardness of this alloy increased continuously with increasing Ce content. Ca and Zn have a positive influence in quantities of 0.5 to 1%. Small additions of Mn and Al lead to some decrease in the hardness and only a further increase of the Mn and Al contents

Card 3/5

SOV/24-58-8-16/37
of Magnesium and

Influence of Thorium on the Heat Resistance
Some of its Alloys

brings about an increase in the hardness. In Fig.6 the influence is graphed of additions of Al, Ca, Ce, Mn and Zn on the long duration hardness of the Mg-3% Th alloy. An idea of the influence of the various components on the high temperature strength of a Mg-3% Th alloy can be gained from the data of Table 5, which contains a comparison of the short duration and the long duration hardness at 300°C (after stabilisation annealing at this temperature for 100 hours) of the ternary alloys; in addition to the better experimental results of the authors themselves, this table contains data for alloys Mg-Th-Zr and Mg-Th-Zr-Zn, alloys which are most widely publicised in Western literature. These alloys were produced by the authors and tested under conditions similar to those applied to the earlier investigated alloys. It can be seen that the highest hardening of Mg-Th alloys at elevated temperatures is ensured by such elements as Mn and Ce. For these, the highest hardness values were obtained, higher even than those containing zirconium and

Card 4/5

Influence of Thorium on the
and Some of its Alloys

Heat

Resistance

SOV/24-58-8-16/37

of Magnesium

zinc. Engineer I. M. Bavykina and G. M. Bordina
participated in the experiments.

There are 6 figures and 5 tables and 3 references, all
of which are English.

SUBMITTED: October 8, 1957

1. Heat resistant alloys--Properties
2. Magnesium--Properties
3. Magnesium alloys--Mechanical properties
4. Magnesium alloys
--Temperature factors
5. Magnesium alloys--Test results
6. Thorium
--Metallurgical effects

Card 5/5

SOV/24-58-10-22/34

'Investigation of the Softening of Gold-Copper Solid Solutions

temperatures was used for studying creep. The 51% Au alloy (Cu_3Au) was studied during its transition from the disordered to the ordered state and the 76% Au alloy (CuAu) only during disorder establishment. The results are given in a table, and graphically in Figs. 2 and 3. Although in long term loading the micro-hardness decreases with increase in temperature, in short term tests it slightly increases up to about 300°C , after which it drops sharply. In similar tests for pure copper and gold specimens, the microhardness falls with rise in temperature in both long and short term tests, but in the latter retardation occurs at about 300°C . As compared with Al-Zn alloys, AuCu alloys creep at a considerably lower rate, but they soften at $300-400^\circ\text{C}$ much more readily than the respective pure metals, probably owing to the melting point of the alloys being lower than those of the pure metals. The fact that the yield strength of AuCu alloys during order and disorder establishment does not drop sharply is a proof that normal diffusion, involving shifting of atoms, alone cannot bring about rapid softening and increase in plasticity at high temperatures. It is likely that in order to ensure a sufficient degree of diffusion and to increase plasticity,

Card 2/3

SOV/24-53-10-22/34

Investigation of the Softening of Gold-Copper Solid Solutions

displacement of atoms at the boundary surfaces of two phases at the point of change in solubility with temperature, or in the boundaries of separate crystallites of the same phase, may have to take place during recrystallisation. In order and disorder establishment processes occurring throughout the entire volume of solid solution alloys, the transfer of particles appears to be too slow to heal the beginnings of breakdown of structure during deformation, and hence these alloys have no great plasticity and yield strength in tension. There are 3 figures and 1 table.

SUBMITTED: May 5, 1958.

Card 3/3

SOV/129-58-11-5/13

AUTHORS: Bochvar, A.A., Academician, Drita, M. Ye., Candidate
of Technical Sciences, Sviderskaya, Z. A. and Kadaner, E.S.

TITLE: Influence of the Temperature and of the Preliminary Heat
Treatment on the Long Duration Strength of a Cast and
Deformed Alloy (Vliyaniye temperatury i predvaritel'noy
termicheskoy obrabotki na dlitel'nuyu prochnost' litogo
i deformirovannogo splava)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 11,
pp 32-37 (USSR)

ABSTRACT: The authors investigated the differences in the changes
of the high temperature characteristics of a cast and
deformed alloy of the system Mg-Mn-Al-Ca containing
1.5% Mn, 0.5% Al, 0.3% Ca and rest Mg (Ref 1). Specimens
cast in earthen moulds as well as specimens of the same
composition after pressing in the hot state with a
deformation of 90% were investigated. The changes were
studied of long duration strength on various testing
times at elevated temperatures. The long duration
strength values determined on the basis of testing five
or six specimens for each point are entered in Table 1;
the graphs Fig.1 show the change of the long duration

Card 1/3

SOV/129-58-11-5/13

Influence of the Temperature and of the Preliminary Heat Treatment
on the Long Duration Strength of a Cast and Deformed Alloy

strength of the cast (top graph) and the deformed (bottom graph) alloy as a function of the temperature and testing time and it can be seen that there is a considerable difference between the two sets of curves, the cast structure being the more stable one. To establish the magnitude of the possible deviations of the long duration strength of an alloy in the two structural states, the authors investigated the influence of preliminary heating within a wide range of temperatures (150 to 600°C). Up to 450°C the annealing was effected in air using a magnesium oxide cover. Heating to 500 and 600°C was effected in sealed quartz ampules from which the air was evacuated. In both cases the heating time was 24 hours. The results are entered in Table 2. In Fig.2 the dependence is graphed of the long duration strength of the cast and the deformed Mg-Mn-Al-Ca alloy as a function of the preliminary heating temperature for both states. In the case of the structure obtained by casting, high temperature heating intensifies the tendency to creep, whilst in the case of a structure

Card 2/3

SOV/129-58-11-5/13

Influence of the Temperature and of the Preliminary Heat Treatment
on the Long Duration Strength of a Cast and Deformed Alloy

produced by deformation the same heating will bring about an improvement in the heat resistance. The process of recrystallisation, which is effected as a result of displacement of the atoms from one crystal to the other, intensifies the creep of the deformed material if the first stages of this process proceed directly during heat resistance tests. However, if recrystallisation is effected earlier by means of heating at a sufficiently high temperature of the deformed alloy, then the recrystallisation will have a positive influence on the heat resistance due to the creation of a more stable structure and a reduction of the division surfaces which serve as foci of diffusional displacements. There are 4 figures, 2 tables and 4 Soviet references.

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy, Ac.Sc., USSR)

Card 3/3 1. Alloy castings--Mechanical properties 2. Alloy castings--Heat treatment 3. Alloy castings--Temperature factors 4. Alloys--Deformation

20-119-2-34/60

AUTHORS: Sviderskaya, Z. A., Drita, M. Ye., Kadaner, E. S.

TITLE: The Micro-Heterogeneity Variation in Alloys Subjected to Heating (Izmeneniye mikroneodnorodnosti splavov pod vliyaniyem nagreva)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, No. 2, pp. 311 - 313 (USSR)

ABSTRACT: S. T. Kishkin and S. Z. Bokshteyn (Reference 1) found that the homogenizing annealing of some alloys with nickel basis increases the inhomogeneity of the distribution of some elements and that it therefore also increases the heterogeneity of the structure of these elements. The authors of the present paper found analogous phenomena in the investigation of the kinetics of the processes of redistribution of the components in the annealing of some light alloys on the basis of aluminium and magnesium. The variations of the micro-heterogeneity of the structure of alloys are represented graphically as function of different conditions of annealing. Such

Card 1/4

20-119-2-34/60

The Micro-Heterogeneity Variation in Alloys Subjected to Heating

tions of the structure of the alloys and the coefficients of the micro-inhomogeneity. An increase of the micro-inhomogeneity of the structure was found by the author of this paper also in the case of the alloys of magnesium with calcium. A further diagram shows the variation of the coefficients of the micro-inhomogeneity with increasing annealing temperature (duration of annealing was 24 hours) for the alloys Mg-Ca and Mg-Mn-Al-Ca. In both cases the heating of the alloys to 500°C strongly decreases the micro-inhomogeneity in the distribution of calcium, which speaks in favor of a great intensity of the redistribution processes occurring at this temperature. At certain conditions of annealing obviously a so-called "secondary heterogenization" of the structure of the alloys, i.e. an increase of the degree of micro-inhomogeneity can take place. There are 4 figures and 3 Soviet references.

Card 3/4

SVIDERSKAYA, Z.A.; DRITS, M.Ye.; VASHCHENKO, A.A.

Effect of cold deformation on properties of alloys of Al - Cu
and Al - Cu - Mg systems in a state of artificial aging. Izv.
vys.ucheb.zav.; tsvet.met. 2 no.6:158-160 '59.
(MIRA 13:4)

1. Institut metallurgii AN SSSR. i Vsesoyuznyy zaochnyy institut
tekstil'noy i legkoy promyshlennosti, kafedra tekhnologii
metallov.

(Aluminum alloys)

18.1210

67806

SOV/180-59-5-23/37

AUTHORS: Drits, M.Ye., Rokhlin, L.L., and Sviderskaya, Z.A.
(Moscow)

TITLE: Influence of Deformation[✓] in the Cold State on the Properties of Alloys of the System Al-Mg₂Si in the Artificially Aged State

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 5, pp 132-135 (USSR)

ABSTRACT: Data are given on the influence of deformation in the cold state on the properties of alloys in the pseudo binary section Al-Mg₂Si for various contents of the intermetallic compound. Alloys of this system age appreciably during hardening. The alloys for the experiments were produced from pure (99.985%) aluminium; [✓]silicon, and magnesium were introduced in the form of alloys produced from the same type of aluminium. The specimens used in the mechanical tests were produced by turning from brass rods of 10.5 mm diameter. After hardening and natural ageing for six days, the specimens were work hardened by stretching to obtain 1, 5 and 10% residual deformation. The work-hardened specimens were subjected to artificial ageing at 170 °C for six hours. ✓

Card
1/5

67806

SOV/180-59-5-23/37

Influence of Deformation in the Cold State on the Properties of
Alloys of the System Al-Mg₂Si in the Artificially Aged State

The conditions of artificial ageing were chosen on the basis of hardness measurements, the results of which are graphed in Fig 1, p 133. The tensile tests were carried out with a load of 2000 kg. The graphs, Figs 2, 3 and 4, characterise the changes in the properties of the investigated alloys as a result of the work hardening. It can be seen that in all the tested specimens, including those of pure aluminium, an increase in the degree of deformation in the cold state leads to an increase in the strength and yield point and to a decrease in the relative elongation. The observed changes of the yield point and elongation are considerably more pronounced than the changes in the strength of the alloys. According to the published equilibrium diagram of the investigated system, the concentration of solid solution at the eutectic temperature amounted to 1.85% Mg₂Si, and at room temperature it dropped to 0.2%. Consequently, alloys containing over 0.2% Mg₂Si can be considered as alloys which become hardened by heat treatment. The effect of ageing (change in the

Card
2/5

67806

SOV/180-59-5-23/37

Influence of Deformation in the Cold State on the Properties of Alloys of the System Al-Mg₂Si in the Artificially Aged State

hardness) on alloys containing various quantities of the intermetallic component Mg₂Si, is illustrated by the graph Fig 1. The data obtained indicate that the effect of work hardening is greatest on ageing alloys containing 0.7 to 1.5% Mg₂Si. In alloys containing an excess second phase (2 and 4% Mg₂Si), the effect of work hardening will be less pronounced. For pure aluminium and for low-alloy alloys (0.2% Mg₂Si) the changes in the mechanical properties with increasing deformation in the cold state will be smaller still. However, the changes in the properties of these alloys indicate that the structural changes brought about by the cold deformation process itself are not entirely eliminated during subsequent ageing. Apparently they remain conserved even in ageing alloys which are richer as regards the second phase. The rate of change in the mechanical properties with increasing degree of cold working of alloys which have been hardened by heat treatment indicates that deformation in the cold state also influences the process of subsequent ageing.

Card
3/5

67806

SOV/180-59-5-23/37

Influence of Deformation in the Cold State on the Properties of
Alloys of the System Al-Mg₂Si in the Artificially Aged State

characteristics of the alloys and a decrease in their
plasticity.

There are 4 figures, 1 table and 8 references, of
which 5 are Soviet, 2 are English and 1 is Italian.

SUBMITTED: January 23, 1959

Card 5/5